Coding Systems

Introduction (Seminar 3)

There are a couple SQL tables in the ManuDyn system where the user is required to define a code to represent the primary reference for the record or item, namely:

- The *COMPANY* table which contains both Customers and Suppliers (or Vendors) in the one table.
- The *ITEMS* table, where both material items and manufactured items are stored.

You will need to establish and maintain a suitable coding system for each of these SQL tables. The choice of a suitable coding system is one of the most important decisions you make in the initial implementation stages of the ManuDyn system.

How you code your Companies, Material Items (Stock) and Manufactured Items (Parts) has an important bearing on the efficiency with which the operator can use the system search and sorting routines.

Codes in ManuDyn may be numerical or alphabetical or an alpha-numeric combination. Where the latter is the case the sorting hierarchy is as follows:

- Control characters (those above the numbers on the keyboard) first, with the “space” or “blank” as the highest.
- Next comes the numbers from “0” to “9”.
- Then the alphabet from “A” to “Z” in uppercase.

Mixtures of upper and lower-case codes are not permitted.

We will begin this Seminar with a discussion on the Rules for Coding and provide some specific example for Customer, Vendors, Material Items and Manufactured Item, coding systems.

Rules for Coding

There are a few universally accepted rules that generally apply to successful coding systems, namely:

- Codes that are descriptive tend to be more easily understood.
- Codes should be simple, comprising the minimum number of characters.
- There should be a minimum number of rules and they should be simply and easily understood.
- The coding rules, once established, should be applied consistently and without exception.

Unfortunately, some of these rules present competing criteria. It is usually difficult for a code to be both descriptive and small at the same time. It is also usually difficult to come up with a coding system that contains minimal instructions (rules) that can be followed in every instance.

We will now examine specific coding systems for the primary SQL tables in the ManuDyn system.

Company (Customer and Supplier/Vendor) Codes

In general, the same coding system can be used for both customers and suppliers. The most commonly used system that I have encountered, for coding customers and suppliers, is the 3+3 rule (or some variation of this rule).

The 3+3 rule can be defined with just a few simple statements, and once stated the rules tend to be remembered by most operators. This rule states that:

- A code is formed by using the first 3 letters of the first word together with the first 3 letters of the second word of the actual company name.
- Words such as “Incorporated”, “Proprietary”, “Limited”, “Company” and “The”, together with their abbreviations (Pty, Ltd and Co and Inc) are to be ignored.
- If there is only 1 word left once these “titles” have been stripped away then the first 6 letters of that word should be used, and if there are fewer than 6 letters, then whatever is available is used, padded out with the hash (#) symbol.
- If initials form an integral part of the name, they should constitute the first word (JR# or J.R for example), or alternatively they could be added at the end of the code.

Using these rules, the codes for the following list of customers would be:

Customer Name	Code Assigned
Custom Made Products Limited	CUSMAD
Manufacturing Software Pty Limited	MANSOF
The Customer Pty Limited	CUSTOM
JR Manufacturing & Sons Ltd	JR#MAN
Sheet Supplies of UK Limited	SHESUP
Biggins and Boycote Limited	BIGBOY

It should be noted that nowhere are abbreviations mentioned.

Abbreviations are not permitted in the 3+3 rule.

We have used the hash (#) characters to pad out the code where appropriate, rather than the asterisk (*). The latter is used throughout the ManuDyn system as the “wild card” indicator and incorporating it into the code may result in unintended search and/or sorting results.

One problem with the 3+3 rule is that the combinations of letter may result in some unusual word constructions emanating from some customer names. Another problem is a possibility, albeit small, that the same code may result from two or more customers (or suppliers). This, naturally enough, is not permitted and you will need to define a coding rule to cover this situation. If you don’t do this, the operator most certainly will, and Murphy will tell you that they will do precisely what you do not want them to do.

One way of overcoming this is to assign a numerical suffix to the end of the code. Some clients take this a step further and create a variant of the 3+3 rule (called the 3+3N rule), which uses the first 3 characters of the first word only and then a 3-digit numerical number starting with “001”. The next time the same 3 characters are used for a different customer the numeric suffix will be “002”.

You can even use the system “Lookup” display itself to determine the next suffix number, which is to be applied to a 3-digit code sequence, and as such, a separate register is not required.

Applying the 3+3N rule to the list of customers and suppliers above produces the following result:

Customer Name	Code Assigned
Custom Made Products Limited	CUS001
Manufacturing Software Pty Limited	MAN001
The Customer Pty Limited	CUS002
JR Manufacturing & Sons Ltd	JR#001
Sheet Supplies of UK Limited	SHE001
Biggins and Boyson Limited	BIG001

In some respects, the 3+3N rule is an easier coding system to manage and in one respect this produces a more presentable list of codes. It is not perfect however, as BIGBOY is still a BIG001.

One problem with the 3+3N rule is that it is not as descriptive as the 3+3 rule. A good compromise would be to combine the two and use say a 2-digit numeric for the suffix. This produces a coding system we can call for example the 3+3+2N rule.

So what is our recommendation?

The 3+3 and the 3+3N and the 3+3+2N are all suitable systems and they are all consistent with the rules for coding.

You need to decide which coding system best suits your requirements for customer and supplier coding, and then apply what ever rules you define consistently.

Material Item (Stock) Codes

As the ManuDyn Material Item table consists of both raw material and finished goods (the manufactured parts), any coding system will need to clearly separate these two basic item categories and it is likely that two completely different coding systems may prevail. You will require an assigned prefix to ensure that raw materials, consumable items and finished goods do not get confused. The super prefix that we recommend is to use “R” to describe raw materials, “C” or “Z” to define consumables and “F” to describe finished goods. The latter may be further categorised into sub-assembly “S” as well as final assembly “F” type finished goods.

The raw material Item (or Stock) coding system is the most difficult code to categories. A different set of rules is likely to be required for each different material item category. For the ManuDyn we recommend a code consisting of the following components:

Component	Comment
Prefix	This is usually a 2 or 3-character prefix, defining a broad product group and incorporates the super prefix described above.
Description	The descriptive part of the code which enables operators to recognise it easily.
Size	Defines the specific dimensions of the item.
Finish	This may be appropriate in order to distinguish between different finishes

This coding system can be called the “Prefix-Description-Size-Finish” code or PDSF code for short.

First we shall examine the prefix component of the PDSF code. We have already discussed one aspect of the prefix, namely, to separate raw material from fished goods and consumable type stock items. The first character of the item code is essentially a super prefix.

The purpose of the prefix is to bring like items together. Accordingly, the purpose of the characters following the super prefix, is to categorise materials (or other items) of the same “kind”. This reference can be either numeric or alphabetic.

Upon first examination you might reason that this reference should consist of alpha characters as these are more descriptive. The problem with this is, that no matter what rational you apply to define the alpha characters to be used, you soon come across the situation where two or more dissimilar items have the same alpha code.

The result is that a significant part of your prefix codes end up not being descriptive of the item type. You will be forced to adopt an un-natural abbreviation for some items, which will lead to an inconsistency in your coding system.

It is recommended that a numeric code, from 00 to 99, be used as the “type” reference in the Stock Code prefix.

Raw material stock codes would have a prefix from R00 to R99. The prefix for finished goods would be F00 to F99 and that for consumable will be Z00 to Z99.

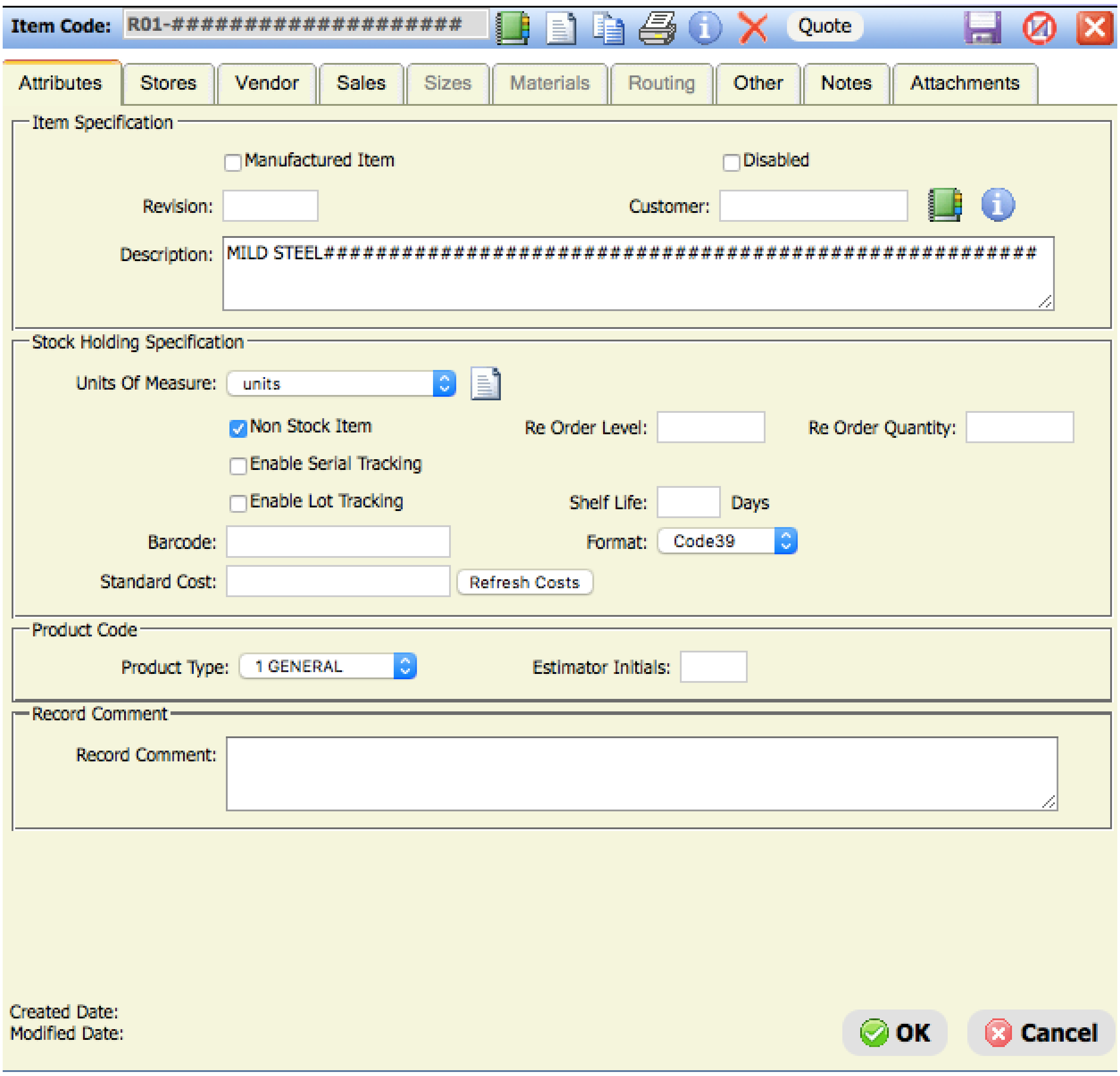
You will need to make a list of the various types of raw materials (and other items), categorise them, and assign the prefix (leaving plenty of gaps between the numbers so that you can assign new prefixes for items you initially omit while retaining a logical prefix assignment).

Clearly you will need to document the prefix assignments that you make. It is also useful to document an example of each code type, as you define the other rules concerning the construction of codes. Fortunately, there is a way of actually using the ManuDyn system to do this.

Assume, for example, that the following list represents some of the code types that you wish to define, together with their prefix:

Raw Material Type	Code Prefix
Mild steel sheet	R00
Aluminium Sheet	R05
Stainless steel sheet	R10
Fasteners	R50
Other materials	R99

Each of these items may be recorded in the *Database/Material Items* menu item selection, where a “header” item may be set up in the Material Item list. The Item code will consist of the prefix padded out with hash (#) characters. The material type description represents the first line of the stock code (also padded out), as shown in Figure 1 below.



Item Code: R01-##################

Item Specification

□ Manufactured Item   □ Disabled

Revision: Customer:

Description: MILD STEEL###

Stock Holding Specification

Units Of Measure: units

☑ Non Stock Item   Re Order Level: Re Order Quantity:

□ Enable Serial Tracking

□ Enable Lot Tracking   Shelf Life: Days

Barcode: Format: Code39

Standard Cost:

Product Code

Product Type: 1 GENERAL   Estimator Initials:

Record Comment

Record Comment:

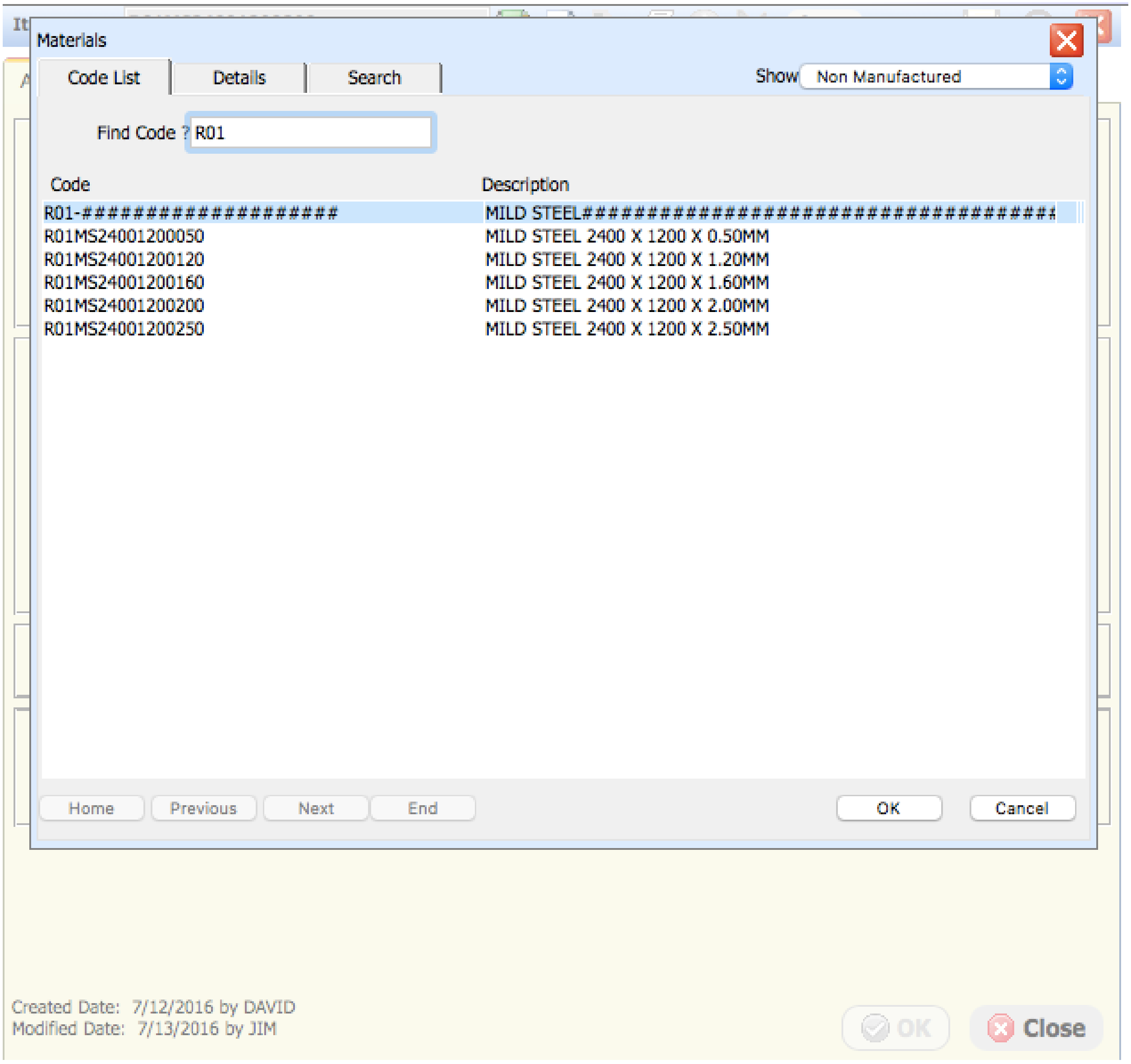
Created Date:
Modified Date:

Figure 1 – Material Item - Code Header

You should probably make this item a “Non Stock” material item, and deactivate the “Multiple Stores” and suspend SLT if they are activated. No other information needs to be recorded against the stock code at this point (though you could use the descriptive fields to define how a code for this item should be constructed and provide an example).

You can enter and store all of the items displayed on your raw material type list, you will have effectively used the system for your material type reference documentation.

A second advantage of doing this is that each of these type references now constitutes a header, which is prominently displayed in the system “Lookup” display. An example of this is shown in Figure 2 below.



Show: Non Manufactured

Find Code ? R01

Code	Description
R01-####################	MILD STEEL#####################################
R01MS24001200050	MILD STEEL 2400 X 1200 X 0.50MM
R01MS24001200120	MILD STEEL 2400 X 1200 X 1.20MM
R01MS24001200160	MILD STEEL 2400 X 1200 X 1.60MM
R01MS24001200200	MILD STEEL 2400 X 1200 X 2.00MM
R01MS24001200250	MILD STEEL 2400 X 1200 X 2.50MM

Created Date: 7/12/2016 by DAVID
Modified Date: 7/13/2016 by JIM

Figure 2 – Material Item Lookup

An examination of Figure 2 provides a further insight into coding practices. The code for each material type is, itself, likely to be segmented. In the example above for Mild Steel Sheet the following rules have been applied:

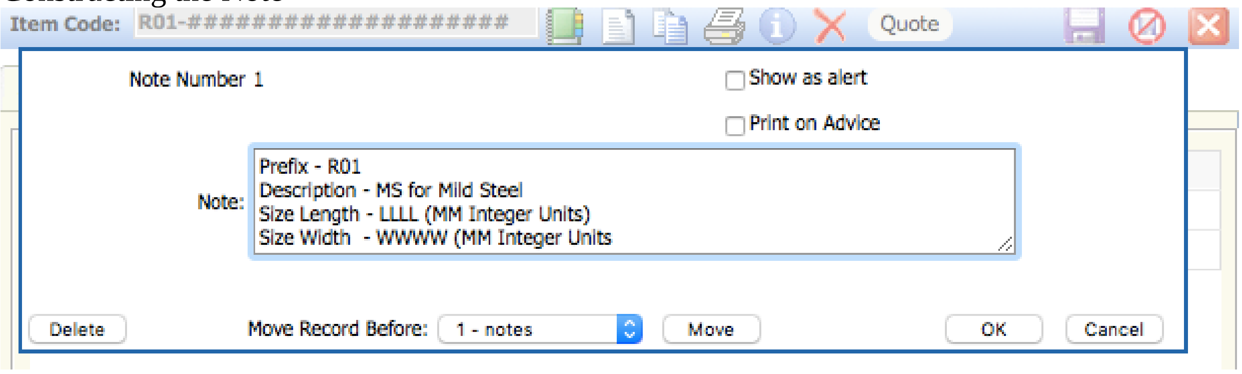
- The Prefix is R01.
- The Descriptive component is MS.
- The Size component is LLLLWWWWTTT where:
  LLLL represents 4 characters describing the sheet length in millimetres.
  WWWW represents 4 characters describing the sheet width in millimetres.
  TTT represents 3 characters describing the sheet thickness in hundredths of a millimetre.
- There is no Finish component.

It should also be noted that the thickness 0.50mm is written as “050”, that 1.20mm is written as “120” and that a sheet width or length such as 900mm would be written as “0900”. That is, each code segment representing a size is padded out with leading (and trailing) zeros to fill out the entire space available.

A set of rules concerning each material type will need to be documented.

Once again you can use the ManuDyn system to do this rather than establish some other reference manual. The best place to do this is in the Notes Tab associated with the Material Item Code, material type header, as shown in Figures 3 and 4 below.

Constructing the Note



Item Code: R01-####################

Note Number 1

□ Show as alert

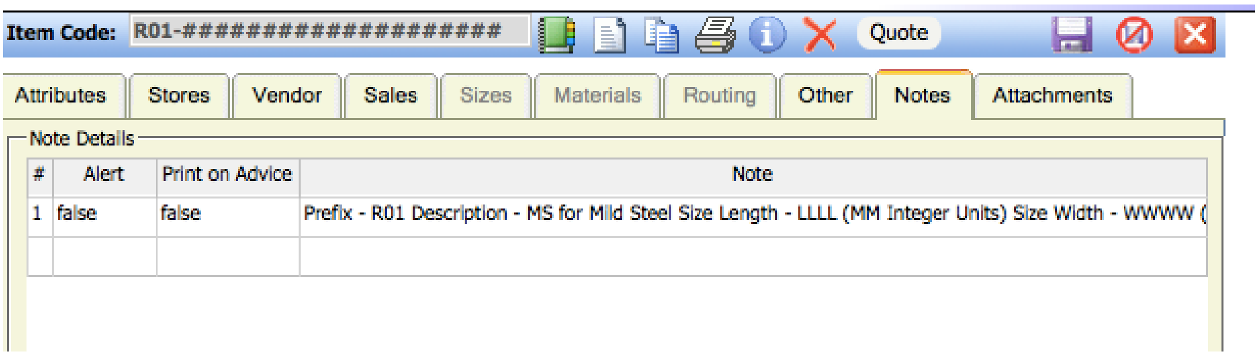
□ Print on Advice

Note:
Prefix - R01
Description - MS for Mild Steel
Size Length - LLLL (MM Integer Units)
Size Width - WWWW (MM Integer Units

Move Record Before: 1 - notes

Figure 3 – Material Item Note Construction

With the Note constructed



Item Code: R01-####################

Note Details

#	Alert	Print on Advice	Note
1	false	false	Prefix - R01 Description - MS for Mild Steel Size Length - LLLL (MM Integer Units) Size Width - WWWW (

Figure 4 – Material Item Note Tab display

Now if any operator needs to enter a new material of this type they simply need to recall the note associated with the material type header to learn how to code the new material. This is much better than a separate reference manual.

Manufactured Item (Part) Codes

For the Manufactured Item code the first option is always to use whatever your customer calls the item. When they call you to talk about their job they will often give you their part number reference when making the enquiry.

There are some problems however with using the Customer’s part reference. The first problem encountered with this policy is the case where you have a standard product line defined by some price list document. In this case you will need to define your own Part Code in accordance with the material item coding system described above. Where the Manufactured Item is also a Stock Item the Stock Code system, including the use of a finished goods prefix, will need to be used.

The second problem with the policy of using the Customer's reference as the Part Code, is that two or more customers can use the same reference. Now the obvious solution here is to add a customer prefix to the part reference. The following examples illustrate this:

Customers Part Reference	Customer Code	Part Code Assigned
DR111-345 Issue A	CUS001	F00CUS-DR111-345-A
Front Panel	MAN001	F00MAN-FRONTPANEL
A123-23-A	CUS002	F00CUS-A123-23-A
Front Panel	JR#001	F00JR#-FRONTPANEL
A129	SHE001	F00SHE-A129
Front Panel	BIG001	F00BIG-FRONTPANEL

In this example I have used only the first 3 characters of the Customer Code. You may need to use the entire code in the unlikely event that two or more customers have both the same prefix and the same part reference.

In this example I have also stripped away blanks or spaces. There are two good reasons for doing this:

- The code should not be longer than is otherwise required.
- Blanks or spaces within the code may cause the code not to be read by a barcode scanner.

If you intend to use barcodes, make sure there are no blanks or spaces in your code.

A second point to note with respect to the ManuDyn Barcode Shop-Floor-Data-Collection system is that it operates using the 3 of 9 coding system. This system allows the numbers (0-9) and the alphabet (A-Z with no distinction between upper or lower case), and only a limited number of control characters ($%-+/.).

Note i. You will not be able to use the hash (#) as the "pad out" characters if you intend to use barcodes within your operation, as it is not one of the allowable characters that can be read with the 3 of 9 barcode. You will need to choose one of the allowable characters such as the dollar sign ($) or the minus (-) or plus (+) symbols.

ii. The use of commas (,) or colons (:) or quotations (") within codes may also cause problems when such codes are read (interpreted) by third party software systems and as such should be avoided.

The third problem with the policy of using the Customer's reference as the Part Code, is that your customers may not have a reference name for their part. In this case you will have no option other than to assign the Part Code.

One simple method you may wish to adopt is to use, say, the first three characters of the Customer's Code plus some date reference to formulate the code. For example:

Customers Part Reference	Customer Code	Part Code Assigned
None	CUS001	F00CUS001-20010426
None	MAN001	F00MAN001-20010426

None	CUS002	F00CUS002-20010426
None	CUS001	F00CUS001-20010426/2

You should note that I have used the Military format for the date reference (i.e. yyyymmdd order). The reason for this is that this allows every part reference for the same customer to be automatically sorted in date order.

You should also note, from these examples that if two or more parts for the same customer need to be created on the same date you can simply added an appropriate suffix to the code.

Codes for other ManuDyn SQL tables

The other files in the ManuDyn database have codes that in general are assigned by the system. For example, the Quote Numbers the Sales Orders (Jobs), the Invoice Number and the Purchase Order Number.

There are options within the system however to set a prefix against the Quote, Invoice and Purchase Order and also to define the format for the manufacturing Job Number. These options are located in the *System Settings/Number Counters* menu item.

It is recommended that you set a prefix for the Invoice and Purchase Order (say “I” and “P” respectively) and that you set-up the job number counter so that an itemised numbering system be used for sub-assembly orders. That is, if the Job Number assigned (by the system) to the final assembly is 12345, then the first sub-assembly generated by the explosion will have a Job Number of 12345.1. The second sub-assembly would be 12345.2 and so on.

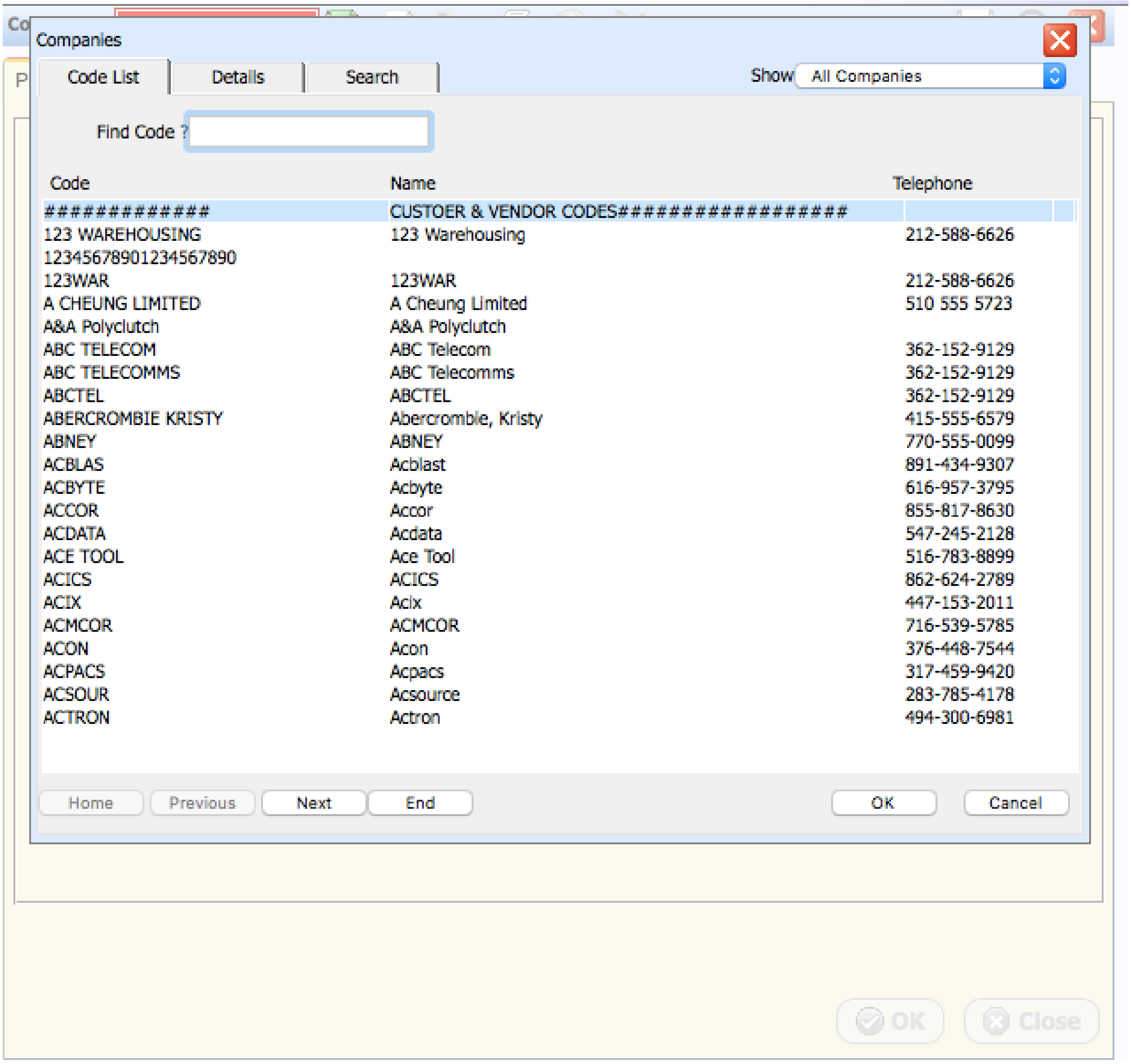
For more information concerning the initial setup of the various number counters within the ManuDyn system you should consult system Help and/or video tutorials.

Documentation

One important thing to do once the coding system has been defined is to document it and provide a facility to let the users know how to code. I have already discussed a method for doing this efficiently, during the examination of the Material Item coding system above. Namely, by using the ManuDyn Notes database associated with each Material Item type header. This procedure is ideal as you end up using the system itself as both the documentation register, and the facility for disseminating the “How To” information.

This is fine for the Stock Code where a logical header can be created. What about the Customer, Supplier and other codes?

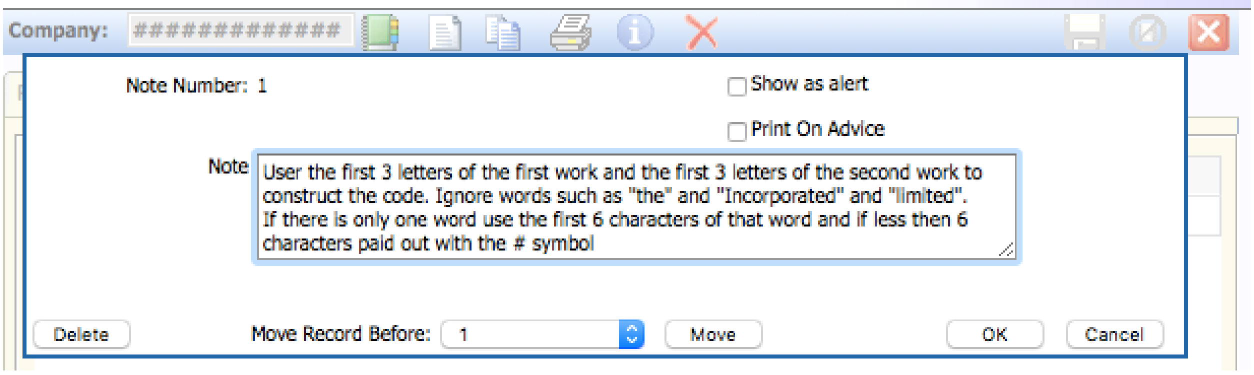
There is no reason why the same procedure can’t be used. In this case, however, there is only one header that is required. Figure 5 is an example of the header that may be used for the Customer file.



Code	Name	Telephone
#############	CUSTOER & VENDOR CODES##################	
123 WAREHOUSING	123 Warehousing	212-588-6626
12345678901234567890		
123WAR	123WAR	212-588-6626
A CHEUNG LIMITED	A Cheung Limited	510 555 5723
A&A Polyclutch	A&A Polyclutch	
ABC TELECOM	ABC Telecom	362-152-9129
ABC TELECOMMS	ABC Telecomms	362-152-9129
ABCTEL	ABCTEL	362-152-9129
ABERCROMBIE KRISTY	Abercrombie, Kristy	415-555-6579
ABNEY	ABNEY	770-555-0099
ACBLAS	Acblast	891-434-9307
ACBYTE	Acbyte	616-957-3795
ACCOR	Accor	855-817-8630
ACDATA	Acdata	547-245-2128
ACE TOOL	Ace Tool	516-783-8899
ACICS	ACICS	862-624-2789
ACIX	Acix	447-153-2011
ACMCOR	ACMCOR	716-539-5785
ACON	Acon	376-448-7544
ACPACS	Acpacs	317-459-9420
ACSOUR	Acsource	283-785-4178
ACTRON	Actron	494-300-6981

Figure 5 – Company Table lookup

As with the Material Item Code we can use the notes register against the header to record the rules for coding customers and vendors.



#############

Note Number: 1

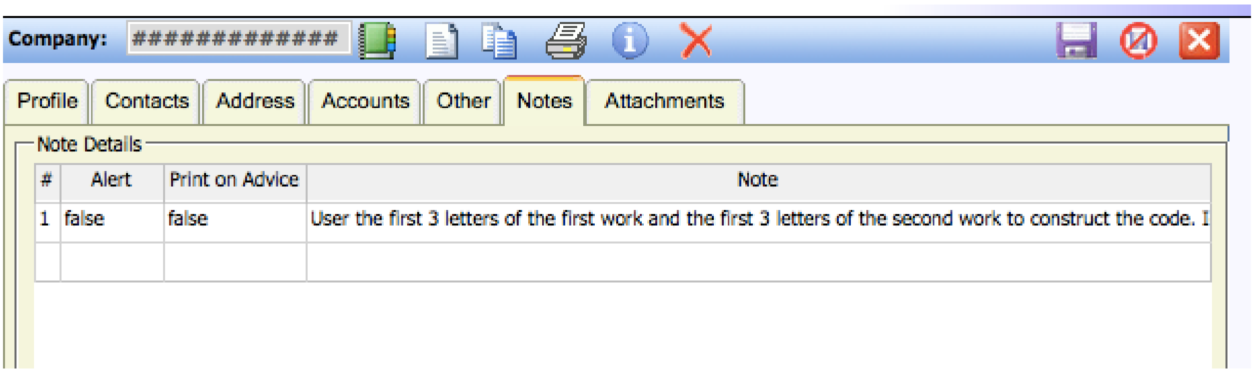
□ Show as alert

□ Print On Advice

Note: User the first 3 letters of the first work and the first 3 letters of the second work to construct the code. Ignore words such as "the" and "Incorporated" and "limited". If there is only one word use the first 6 characters of that word and if less then 6 characters paid out with the # symbol

Move Record Before: 1

Figure 6 - Customer Header Note



Company: #############

#	Alert	Print on Advice	Note
1	false	false	User the first 3 letters of the first work and the first 3 letters of the second work to construct the code. I

Figure 7 - Customer Header Note Tab Display

In the same way headers, and appropriate notes, could be set up for the Supplier codes. The result is that no external coding manual, outside of the ManuDyn system, ever needs to be created or maintained.

This concludes this seminar – you should now be in a position to discuss and decide upon a suitable coding system for your ManuDyn System